

Facility Seeks Best Lost Circulation Material

Ground nut shells, cotton seed hulls, automobile battery casings, and volcanic glass would seem to have little in common. But each one could be used as a "lost circulation material" (LCM) and be ground up and pumped down a borehole to prevent losing the circulation of vital drilling fluid — "mud" colloquially — that cleans the hole, and lubricates and cools the bit during a drilling operation.

These materials are common and cheap. But still, they do cost money. Before pumping money down a borehole it would be nice to know that using a particular LCM will pay off in more efficient drilling.

"Choosing an effective lost circulation material is generally hit-or-miss," says James Kelsey, supervisor of Geothermal Technology Development Division 6241. "There have been no major advancements in LCM science for many years."

Information from experiments at the Division's unique Lost Circulation Test Facility is now being correlated with highly accurate pictures of the interior surface of boreholes thousands of feet underground. These borehole logs are made by a high-temperature well-logging tool also developed in the division (see related story).

"Once we know what it looks like downhole, we can simulate the conditions in the lab, test for the best LCM for that kind of fracture and flow, and model it on the computer," says Glen Loeppke (6241), who designed the Lost Circulation Test Facility. "Eventually we will develop an 'expert system' of computer codes capable of predicting the best LCM for any situation."

A drilling operation won't work efficiently — and may even be jeopardized — without enough mud circulating through the system. Mud emerges from nozzles in the drillbit and flows up the wellbore annulus through the geologic formation outside of the drill stem.

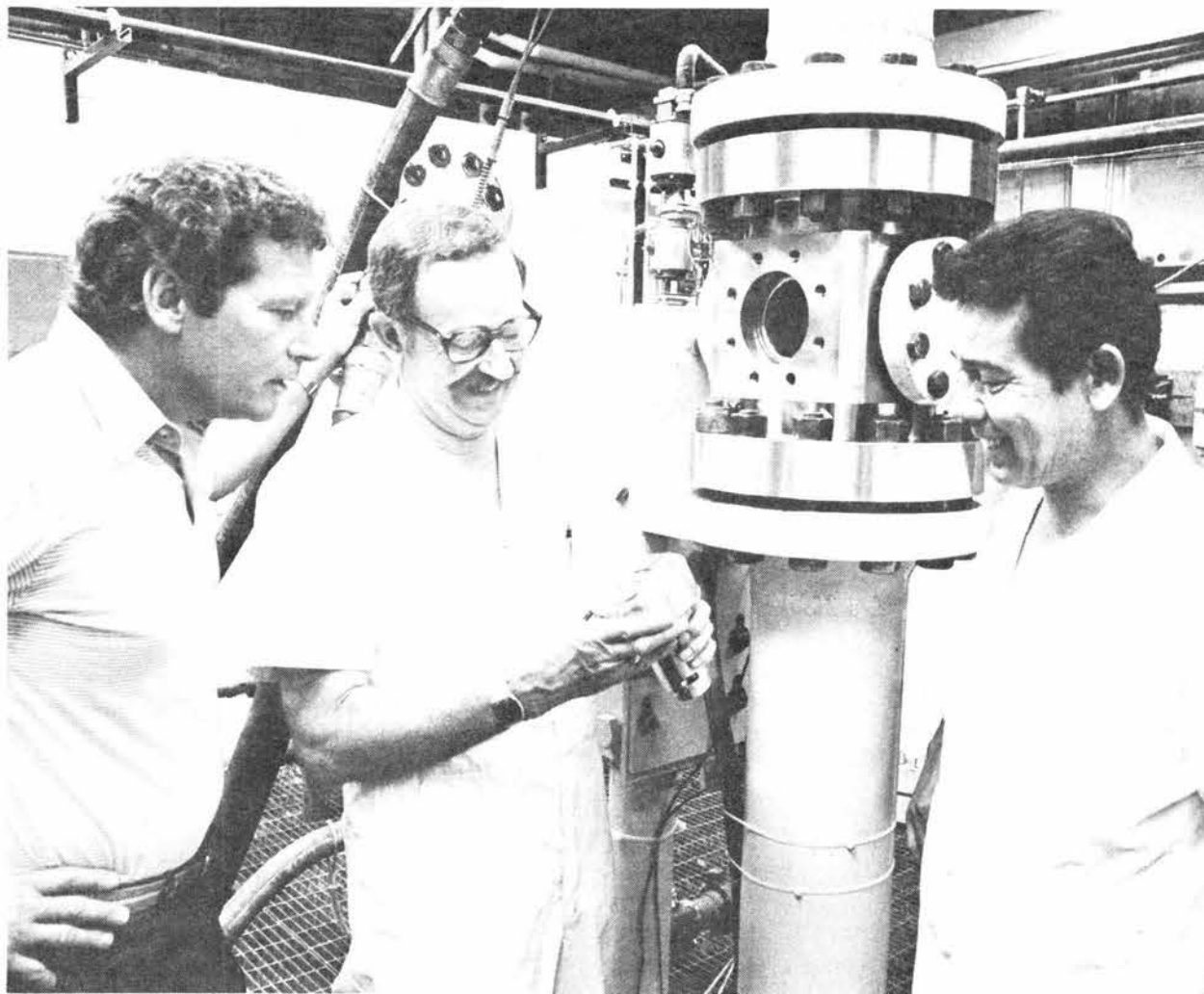
"In oil and gas drilling, engineers can monitor circulation as they drill to ensure that mud comes out of the hole at the same rate it goes down," says James. "But geothermal operations drill into formations with huge cracks and gaps. Suddenly there'll be no return mud."

That's lost circulation, and it causes many problems.

"The first problem is that mud itself is expensive," James notes. "Mud also helps stabilize the borehole, so the major problem is that severe lost circulation can cause the formation to slough in on the drill string, and the bit gets stuck. You can't drill through a steel drillbit, and it's extremely costly to fish one out of the hole."

Lost circulation and problems stemming from it can increase the cost of drilling and completing geothermal wells by more than 15 percent. Completing a typical geothermal well costs \$2,000,000, making lost circulation the most serious well-development problem facing the geothermal industry. That's why the division is interested in lost circulation materials.

Most conventional remedies for lost circulation were developed in the oil and gas industry more than 50 years ago. Drillers didn't know what lost circulation zones



HOLDING A "SIMULATED FRACTURE," Glen Loeppke stands beside the quantitative test vessel (see artist's rendering) inside Geothermal Technology Division 6241's Lost Circulation Test Facility. Looking on are James Kelsey (left), supervisor of the Division, and John Gabaldon, a technician at the facility. Loeppke designed both the test vessel and the facility to evaluate the effectiveness of materials used to plug fractures and stop lost circulation of drilling mud in geothermal wellbores.



LAB NEWS

VOL. 37 NO. 9

SANDIA NATIONAL LABORATORIES

JUNE 7, 1985

looked like downhole, so they simply poured in whatever waste materials were readily available. Pecan shells were fine for southwest Texas, wheat straw for Kansas. There was very little science involved. LCMs were recommended and used like folk medicines — because a buddy said a particular material had worked.

In routine oil and gas drilling, as much as a ton of ground up nut shells — selling for \$28 per 50-pound bag — might be added to the drilling mud. The LCM plugs up cracks in the formation through which mud would otherwise escape. But much of today's oil and gas drilling is no longer routine, involving very deep wells or off-shore drilling where downhole temperatures may exceed 250°F. Most conventional LCMs won't work at such temperatures.

Even harsher conditions are common in geothermal operations, which routinely drill into extremely hot (400°F or more), extremely fractured (some gaps are as big as a fist) geologic formations. Organic, cellulose-based LCMs disintegrate completely when used in geothermal drilling.

The Lost Circulation Test Facility was built at the suggestion of an industry review of Sandia's geothermal R&D programs to

investigate the problem of finding LCMs tough enough for geothermal drilling. The facility has two test systems — one qualitative and the other quantitative.

"We built the qualitative system first," says Glen. "It simulates downhole conditions primarily for demonstration purposes. It showed us what goes on down there, but it was not accurate or practical enough for sustained testing."

The qualitative system consists of a vessel three feet tall and 20 inches in diameter that holds rock and soil packed in an aggregate to simulate the permeable core of a lost circulation zone. Mud mixed with LCM flows into the vessel through a pipe and returns up a channel in the permeable core. It can take up to half a day to break down the system and set it up again for a new test with different permeable core conditions.

The newer quantitative system produces data more easily adapted to existing API (American Petroleum Institute) standards and has a turnaround time of only 15 minutes between tests.

"API bench tests of LCMs have been done for 20 years or more," says Glen.

(Continued on Page Four)

Antojitos

New York, New York -- So great they named it twice, say the T-shirts. Or could it be that the denizens couldn't remember any title more complicated? Whatever, it is a fascinating place to visit. Having just returned from a week there, I'm obviously eminently qualified to make snap judgments about the Other World known as Manhattan Island. The strongest such comes from a most frustrating attempt to drive from the Lincoln Tunnel to Rockefeller Center. That means, to the Manhattan-wise, crosstown, dreaded crosstown. It seems that what the city planners did was to create beautiful, wide, relatively uncongested streets running uptown and down -- but never across. The cross streets would be, in most other towns, alleys. That's where the deliveries are made, so the trucks doublepark with abandon (or maybe they are abandoned). Cross streets are where the construction equipment and supplies live. Cross streets are where the garbage sacks get piled. Cross streets are where the weirdos wander. It's even difficult to walk on the cross streets. Driving on them takes the patience, the time, and the constant alertness to any weakness in your opposition of, say, chess. Apparently, it's the cross streets, paradoxically, that keep the folks on the East Side from being contaminated by the folks on the West Side -- and vice versa.

The second snap judgment is that the cabdrivers descend on any destination with all the savoir faire of sharks during a feeding frenzy -- survival of the quickest.

The third is that New Yorkers may not be the most overtly affectionate people in the country, but they're certainly not the surly sidewinders they're sometimes made out to be. Cabbies, waiters and waitresses, store clerks -- they were unfailingly helpful to, and relatively patient with, us boondockers from beyond the Hudson. Trusting too -- at least our temporary landlady at the bed & breakfast place was; she gave us the keys to her flat, then left it all to us (cats and kitchen included) while she left for a weekend in Connecticut. ●BH

* * *

Murphy on Airliners: As soon as the flight service attendant serves the coffee, the plane encounters turbulence.

Hawkinson's Corollary: Serving coffee on aircraft causes turbulence.

flex@kiback

Q. I think Sandia should give a Sandia belt buckle (the ones available now through the LAB NEWS) to each new employee. It would be a nice way of saying "welcome to the company." And it would be especially appropriate for employees hired directly into programs in which they leave for school

almost immediately and have little time to form a loyalty to the Labs.

A. While your idea has merit, Sandia's policy on these matters is dictated by our parent company, AT&T Technologies, which does not have such a practice. The purpose of Sandia's awards program is to reward employees for services after fixed intervals of time, e.g., 5, 10, 15 years, etc.

J.R. Garcia - 3500

Q. Won't omitting organization numbers from SAND reports (Weekly Bulletin, 10/25/84) mean that the Mail Room will have difficulty in knowing which organization should get any requests for reprints?

A. We eliminated organization numbers from title pages of Sandia reports because they change so often over even a few years that they become difficult to match with either organization or author's name -- without a time-consuming search of phone books. A report is best requested by its SAND number, which is unique by year and report title. We agree that all mail coming to Sandia should carry the current organization number to expedite delivery. Reports should be requested from the library rather than from the issuing organization -- and library reports are stored numerically by year and report number.

H.M. Willis - 3100

Supervisory Appointment



AL JONES to supervisor of Component Research Division 8441, effective April 1.

He joined Sandia Livermore in 1970, first working in the Experimental Mechanics Division on fracture of metals. Later he became supervisor of the Analytical Mechanics Division and then headed the Phase I and Phase II Studies Division. Al then left to become an associate professor of mechanical engineering at UC Davis in 1982, returning to Sandia in 1984 to be a part of the Engineering Division I, now known as the Component Research Division.

His educational background includes a BS and MS in mechanical engineering from the University of Nevada and a PhD in the same field from UC Davis.

Al's hobbies include backpacking, mountaineering, and skiing. He's a member of the American Society for Mechanical Engineers. He and his wife Lolly reside in Livermore and have two children, a son in junior high school and a daughter at UC Davis.



LATEST RETIREES at Sandia Livermore are from left, Bob Marmon (8235) and Phil Sites (8243).

Congratulations

Anne and Tom Felter (8343), a son, Gregory, May 4.

Clara and Wen Hsu (8347), a son, Lawrence, May 18.

Norm and Cheryl Jenson (8470) adopted a boy, Stephen Patrick, May 2.

Dave Nagel (8272) and Regina Rice, married in Pleasanton, April 28.

Ken Lee (8271) and Sandra Molina, married in Stockton, April 20.

Sympathy

To Dennis Sparger (8362) on the death of his father Dennis Sr., a retired Sandian, in Tracy, May 21.

To Wayne Chrisman (8347) on the death of his sister in Kansas, April 24.

To Jim Gruver (8272) on the death of his brother in Watsonville, May 4.

To John Hachman (8313) and Jim Hachman (8274) on the death of their mother in Stockton, April 30.

LAB NEWS

Published Fortnightly on Fridays

SANDIA NATIONAL LABORATORIES

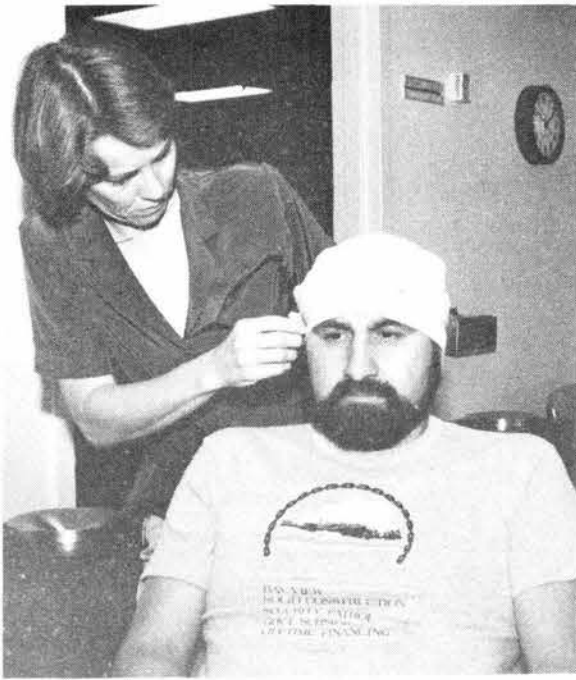
An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA
AMARILLO, TEXAS

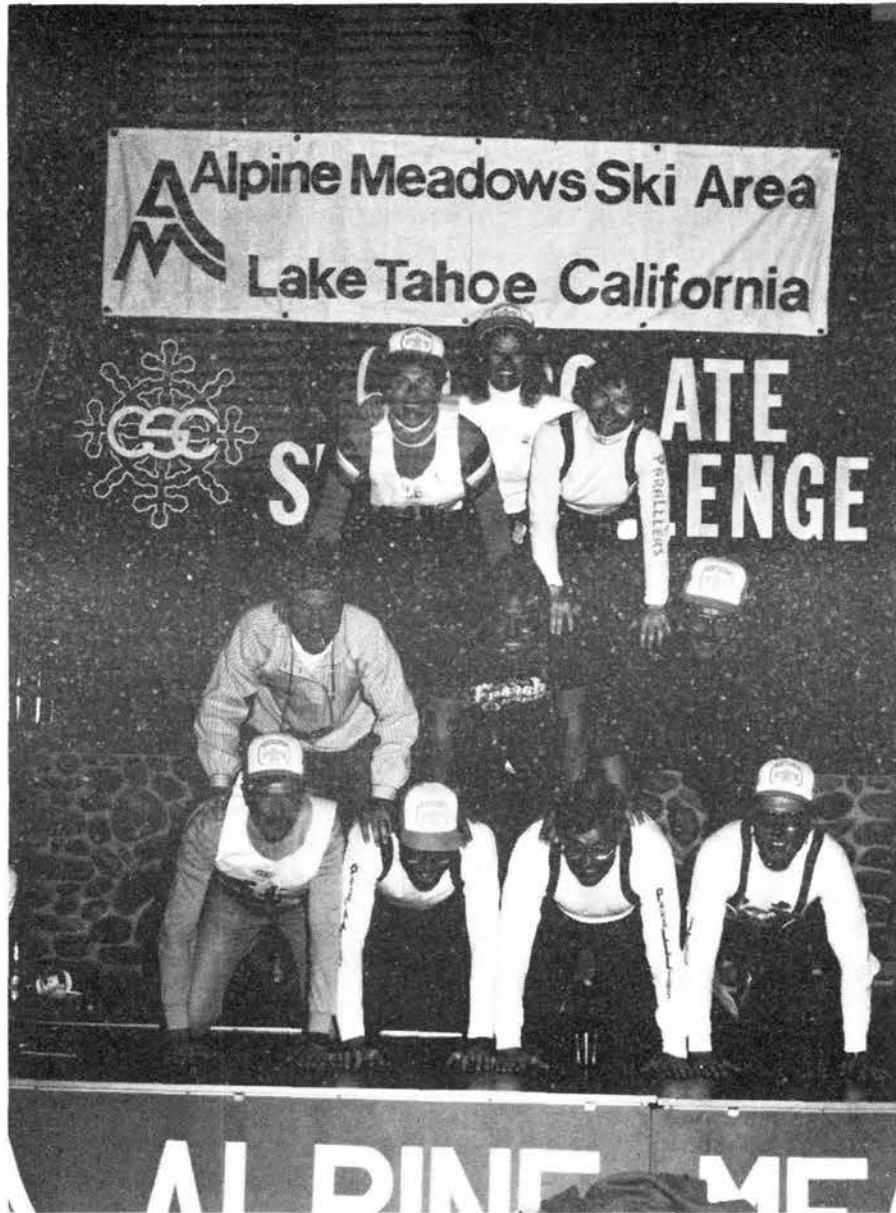
Sandia National Laboratories is operated by Sandia Corporation, a subsidiary of AT&T Technologies, Inc., and a prime contractor to the U.S. Department of Energy.

BRUCE HAWKINSON, Editor
DON GRAHAM, Assistant Editor
NORMA TAYLOR, Writer
LOUIS ERNE, Photographer
GERSE MARTINEZ, Assistant Photographer
BARRY SCHRADER, Livermore Reporter


Member, International
Association of Business Communicators



EMERGENCY TEAM MEMBERS at Sandia Livermore took part in a first aid training class recently, taught by nurses from Medical. Shown practicing head bandaging on a stoic (for a change) Andy Cardiel (8184) is Peg Bon Durant (also 8184). In lower photo, stretcher bearers Leon Seibel (8445) at left, and Jim Mitchell (8183) transport "victim" Roger Watson (8443) in a makeshift pole-and-blanket stretcher.



SKI CHALLENGERS — Sandia Livermore fielded two teams this year for the annual Corporate Cup Ski Challenge at Alpine Meadows, Lake Tahoe. Sandia's Nordic team captured a fifth place out of 10 competing, and the Alpine team placed 45th out of 150 teams. There were 900 participants from 150 major companies throughout the state. Sandians from both teams shown in a pyramid are (bottom from left) John Lippold (8312), Kevin Schroder (8432), Joe Vieira (8445) and Howard Royer (8254); second row, Rick Stulen (8343), Danny Bernacil (8265), and Steve Robinson (8314). Top row, Mary Juhas (John's wife), Holly Stryker (8264), and Mary Clare Stoddard (8471).



SANDIA LIVERMORE NEWS

VOL. 37 NO. 9 SANDIA NATIONAL LABORATORIES JUNE 7, 1985




TAKING PART in a valleywide employee recognition luncheon recently, Dick Claassen (8000) awarded certificates of appreciation to two employees who have outstanding records of volunteer service to their community. Bob Crow (8026), at left, was recognized for seven years of service on the Interfaith Housing board, the last five years as treasurer. Scott Anderson (8153), at right, was appointed three years ago to the Livermore Social Concerns Committee and spent the past two years as the group's chairman, all on his own time as a volunteer. "These two Sandians represent many others who give their own time to better the communities in which they live," noted Dick. The presentation, made at Round Hill Country Club, included some 20 corporations and valley businesses. Guest speaker was Major Ken Cameron, NASA candidate for the space shuttle command. The event was sponsored by the valley Community Volunteer Council.



ENGINEERING STUDENTS from the Oregon Institute of Technology and their faculty adviser visited Sandia Livermore April 18, touring the electronics packaging lab, hybrid lab, telemetry and Gerber labs, combustion vessel lab, spontaneous Raman lab, coal science lab, and facility lasers. Here, Fernando Uribe (8176) explains the operation of the YAG laser used to trim thick film resistors in the microelectronics lab. Rex Eastin (8176) and Bill James (8022) coordinated the briefings and tour for the 18 OIT students and faculty members.

MEDIEVAL WORD PROCESSING

 Many early chronicles — particularly before AD 1000 — are remarkably brief, probably because writing materials were in short supply. At first paper (if available at all) had to be imported from the Arab lands. Both paper and its usual substitute, vellum, were so expensive that often many years of entries were crowded onto a single page.

— Richard Stephenson, "Astronomy in the Monasteries," in *New Scientist* (19 April 1984)

New Facility Seeks LCMs

"Mud and LCM is forced down a steel cylinder and through various-sized slots to see how reliably and under what pressures the LCM will block off the slot. These tests have produced scattered data, and lab results have not always predicted field results."

In the quantitative system (see illustration), mud and LCM circulate through a vessel 10 feet tall and 8 inches in diameter at rates of up to 200 feet per minute under pressures up to 1000 psi and at temperatures up to 400°F.

"The mixture circulates past an API slot at a right angle to the opening, simulating more closely than the bench test does the actual flow of mud and LCM past fractures in a wellbore," says Glen. "We can change API slots in 15 minutes, and with a computer collecting data and controlling pressures, temperatures, and flow rates, our results really look good — very tight, very accurate."

So far, half a dozen of the many common, commercially available LCMs have been tested in the facility. Only one appears to be suitable for geothermal drilling — ground up battery casings. But more tests are planned.

"The battery casing material is good to about 500°F," says Glen. "During the next year we will begin testing other candidate materials, for instance, high-temperature plastics that have been salvaged after their original use."

Rick Givler of Fluid Mechanics and Heat Transfer Division I 1511 has been assisting on the project, working on the computer model; and Billy Caskey, leader of the Borehole Mechanics project in the Geothermal Technology Development Division, has begun coordinating efforts with Ray Harrigan of Intelligent Machine Systems Division 6228 to put together the master "expert system."

Deaths

Alberto Torres, a security inspector in Security Operations II 3436 and president of Local 27 of the International Guards Union of America, died suddenly May 25. He was 51.

He had worked at the Labs since January 1981.

Survivors include his wife, a son, and three daughters.

Chris Dalton, supervisor of Advanced Systems Development Division I 5341, died after a brief illness May 23. He was 52.

He had worked at the Labs since November 1956.

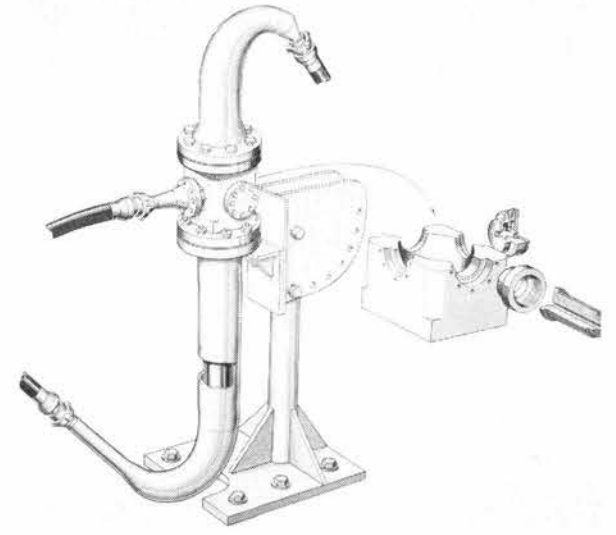
Survivors include his wife, two daughters, and a son.



"Information we are gathering should help solve some of the problems caused by lost circulation in geothermal drilling," says James. "The oil and gas industry stands to benefit from this research also, especially as conventional production requires drilling deeper and hotter wells."

Next time your car battery is dead, take comfort in the thought that its casing might some day be ground up and pumped down a borehole in hopes that its particles will be lost in the oblivion of a very hot, very fractured geothermal formation.

Not only is that a fitting fate for a dead battery, but the increased drilling efficiency may help hasten the day when geothermal energy will be a practical energy source for generating the heat to warm your house and your garage. Your replacement battery might last just a bit longer.



QUANTITATIVE TEST VESSEL — Drilling mud with lost circulation material in solution enters the vessel at the bottom left and circulates through the simulated wellbore in center, exiting through the pipe at the top of the drawing. Cutaway shows test slots simulating wellbore fractures.

Looking Around 10,000 Feet Down

If a driller could just see a lost circulation zone 8000 feet downhole, deciding how to restore the circulation would be easier. But people don't fit in boreholes, and conventional well-logging tools won't work at the high temperatures and pressures that are commonplace in geothermal drilling. Without accurate well logs, the locations of lost circulation zones can only be approximated, and the nature of problem formations can only be guessed at.

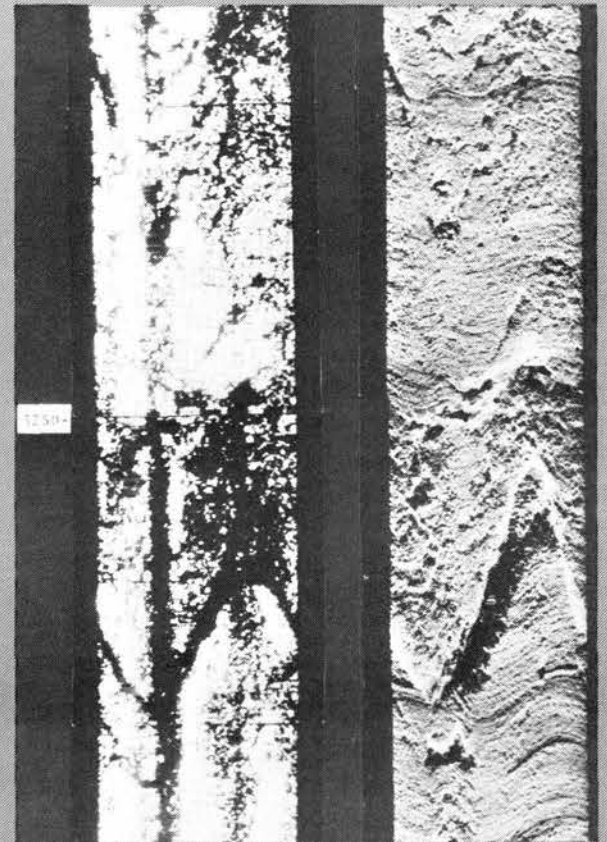
So one of the first steps in researching causes of lost circulation in geothermal drilling (see "New Facility") was to develop a means to look at the lost circulation zone itself.

A tool (designed by Mobil Research and Development Corporation) used by conventional oil and gas well loggers works — but only on holes that are no hotter than 250°F. Tom Bauman and Fred Heard, working in Geothermal Technology Development Division 6241, upgraded the materials and the electronic components used in the Mobil design and developed a high-temperature, high-pressure model.

Called an acoustic borehole televiewer, it sends back to the surface enough data to make a high-resolution picture of the full circumference of the wellbore wall at the bottom of a typical geothermal well, which might be as much as 8000 to 10,000 feet down, where temperatures reach 550 to 600°F and the pressure is 5000 psi.

The televiewer consists of an acoustic transducer inside a steel cylinder. The cylinder is lowered down the borehole and then pulled back up. On the way up, the transducer rotates inside the cylinder and emits bursts of ultra-high frequency sound through a teflon window. The sound hits the borehole wall and is reflected back through the window.

A well-logging truck on the surface records the amplitude of the reflected acoustic energy and the time it takes reflections to return to the transducer. This information yields a black-and-white image of the wellbore surface.



LOST CIRCULATION ZONE — A fracture diagonally bisecting the circumference of a geothermal borehole at a depth of about 3200 feet is indicated by the dark, sine-wave shaped line in the center of the picture on left. The same fracture is computer enhanced to show greater relief in the picture on right. Such views, developed by the acoustic borehole televiewer, will help Sandians in Geothermal Technology Development Division 6241 determine the best lost circulation material to plug borehole fractures and prevent the loss of drilling mud, which is vital in geothermal drilling operations.

Light areas in the image represent smooth, highly reflective surfaces; dark areas represent high-porosity, fractured surfaces — the lost circulation zone. Dark-on-light contrast is great enough to depict individual fractures, pinpointing the cause of lost circulation (see photo).

Knowing what the formations that cause lost circulation look like ensures that experiments at Sandia's Lost Circulation Testing Facility accurately model field conditions. The data obtained at the Facility should translate into effective, predictable solutions to the problems caused by lost circulation.

Cafeteria E-x-p-a-n-d-s

If you haven't been to the Sandia Cafeteria lately, you're in for a pleasant surprise. After four years of planning and about a year of construction, the newly expanded, renovated, and remodeled "861 Cafe" will open next Monday.

Dave Dumais, ARA food director, is excited about the changes: "With sometimes as many as 900 people eating here — many of them coming between 11:45 to 12:15 — and only 315 seats, people were almost fighting for tables. Not a relaxing way to spend your lunch time. With the expansion, as many as 485 people can be seated at once."

"New buildings, such as 891, 822, and 823, have been constructed to the south, so more employees are eating in the Sandia Cafeteria," George Wayland (3543) adds. "It's been a real problem for people to get served and seated, then eat during the half-hour lunch time."

Also included in the expansion is a large multi-purpose room seating 65, which is partitioned from the rest of the room by a soundproof wall. "This room can be used for just about anything: private luncheon meetings, training sessions, retirement parties. And any Sandia employee can reserve it. We'll cater whatever any group wants," Dave says.

The physical setting isn't all that's changed. Menu offerings are different, too. A salad and sandwich bar has been added along the west wall away from the heavy traffic.

"You can make a salad from a 22-crock selection of fresh produce, and, at the new sandwich bar, you can choose from several varieties of cold cuts — along with several breads and fresh rolls," Dave says.

Both salads and sandwiches will be sold by the ounce with salads at 15 cents an



A CUT ABOVE — Art Davie (3000) plays Mayor Kinney and cuts the ribbon opening the expansion in the "861 Cafe." George Wayland (3543) and ARA Food Services Manager Dave Dumais (right) look on.

ounce and sandwiches at 35 cents an ounce. "To celebrate the grand opening week, the first ounce is on us," Dave says.

"In the old Deli Section, we'll have a hot French dip sandwich carved to order on any of our special breads and rolls" he continues. "And for the soup lovers out there, we'll have 300 reusable insulated mugs to give to the first 300 soup customers."

Customers who come in during the grand opening week between 12:30 and 1 and who

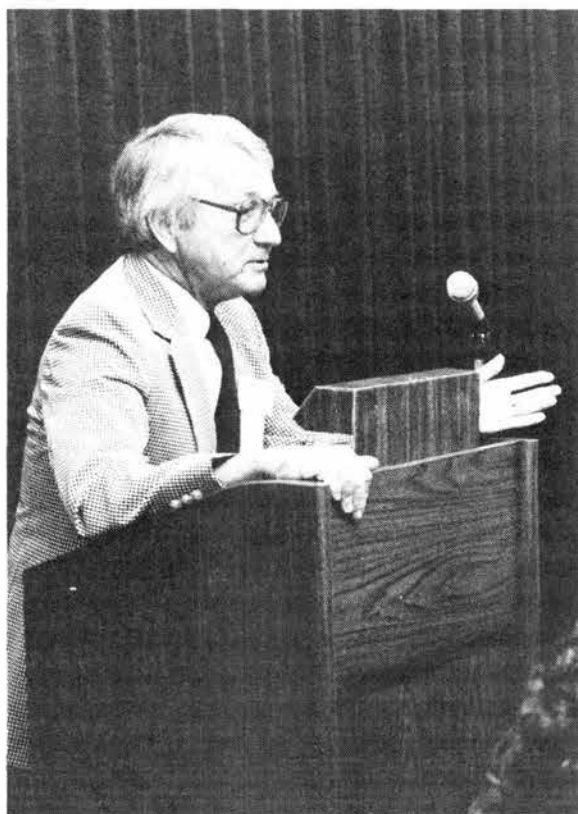
purchase items totaling \$2 or more receive a free ice cream cone.

"And we'll be counting customers during the grand opening week" Dave adds. "The 500th, the 1000th, the 1500th, and the 2000th persons to come through the doors will win five full lunches of \$3.50 for themselves and a friend. That's 10 free lunches in all!"

"Come by and enjoy the spacious new '861 Cafe' and be guaranteed a seat with time to eat at your leisure."

Women Leaders' Day

Technical Careers for Women Encouraged



EMPHASIZING THE INCREASING CHALLENGES ahead in technical fields, Tom Cook (20) noted that the ability to meet those challenges has nothing to do with gender.

The Women's Program Committee recently hosted more than 80 women educators and civic leaders at Women Leaders' Day. Those attending were mainly women high school science and math teachers, counselors, and principals, as well as university educators and civic leaders from city and state.

"We're trying to widen our effort to contribute to a better environment for women to make well-informed career choices," says Margaret Harvey (3511), women's program coordinator. "We also want to increase our effort to help science and math teachers guide young women into careers in science and technology."

Margaret coordinated the day's program during which guests were provided with an overview of Sandia by several speakers. Everet Beckner's (6000) presentation dealt with the kinds of people who work at Sandia and what they do. Herb Pitts (3530) and Jake DeVargas (3510) discussed Sandia's efforts and successes recruiting qualified women for staff positions and for non-traditional employment in the graded ranks.

Regina Hunter (6431), Sharon Fletcher (2811), and Linda Branstetter (1524) gave presentations about the technical programs they're contributing to.

Kathleen Church, assistant principal at Sandia High School, was particularly impressed with the three women's presentations: "Girls somehow seem to get turned off with science and math somewhere along the line. Maybe it's a lack of good role models. If they could see these attractive, articulate young women, maybe they'd be more encouraged to seek careers in science and technology."

"I thought the whole program was intelligently done," she continues. "It was not patronizing."

Coleen Ferguson, a math teacher at Highland High School, was also impressed with the day's program: "I'm going to be more conscientious about encouraging girls to get into upper level math and science courses—there are high-paying jobs out there for them."

A talk by Tom Cook (20) about Sandia's future directions highlighted the final activity, a luncheon at the Coronado Club.

GORDON PIKE (1815),
BILLIE STARCEVICH
(152-2), and STEVE
WEISSMAN (1624)



Supervisory Appointments

GORDON PIKE to supervisor of Electronic Property Materials Division 1815, effective May 1.

Since joining the Labs in June 1969, Gordon has worked in essentially the same group that he now supervises.

He received his BS in physics from Carnegie-Mellon University and his PhD in solid state physics from the University of Pittsburgh. He is a member of the American Physical Society, the American Ceramic Society, and vice president and president-elect of the Materials Research Society. Gordon enjoys bicycling and mountaineering. He and his wife Gwenlynne have one son. They live in NE Albuquerque.

* * *

BILLIE STARCEVICH to supervisor of Travel, Relocation and Savings Plan Section 152-2, effective April 16.

Billie joined Sandia in 1958 as a control clerk in a computer organization. She then worked for many years in cost accounting until 1977 when she became the travel and relocation coordinator in Employee Accounting Division 1952, a position she's held until her present promotion to supervisor of a newly created section.

She enjoys china painting and playing bridge. Billie lives in NE Albuquerque.

* * *

STEVE WEISSMAN to supervisor of Embedded Computer Research Division 1624, effective May 1.

Since joining the Labs in July 1976, Steve has worked in Security Systems Integration Division 5263, designing communications and computer systems to display security and safeguards information.

He received his BS in EE from Cornell University and his MS and PhD, also in EE, from the University of Illinois (Champaign). Steve enjoys tennis, traveling, and cooking. He and his wife Suzanne (1821) live in the NE heights.

* * *

Congratulations

Doug Hodge (2858) and Cheryl Rennert, married in Illinois, May 18.

Pamela Johnson (7223) and Frank Ciccarello, married April 21.

Diana (5164) and Christopher (7483)



LEE BERTRAM (2646)

LEE BERTRAM (DMTS) to supervisor of Applied Mathematics Division 2646, effective May 16.

Lee joined Sandia in June 1974 and has worked the entire time with his present division.

He received his BS and MS in aeronautical engineering from Purdue and his PhD in mechanics from the Illinois Institute of Technology. He taught mechanics at Iowa State University for six and a half years before coming to Sandia. Lee is a member of ASME, American Meteorological Society, Society of Industrial and Applied Mathematics, American Society of Engineering Education, American Association for the Advancement of Science, Society for Natural Philosophy, American Physical Society, and the American Society for Metals. He's a private pilot and also enjoys hiking, skiing, chess, and restoring old cars. He's also a participant in several language groups at the Labs. Lee has two daughters. He lives in the NE heights.

Kureczko, a son, Maxx Christopher, May 20.

Mike Spencer (322) and Brenda Lee, married in Albuquerque, May 25.

Pam (1601) and Al Goldberger, a son, John Christian, May 18.



Here are some current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

UNM MENTAL HEALTH CENTER needs a volunteer with gardening expertise to develop an atrium in the visitor center. Gardening knowledge and creativity, rather than maintenance, is the emphasis in this ongoing project.

YWCA sponsors PAN (Providers Allied for Nutrition), a program to ensure through monetary reimbursement to licensed family day care providers that children in home day care settings are being served nutritious meals. An auditor is needed to develop a system for processing claims for PAN.

VOLUNTEERS FOR THE OUTDOORS is co-sponsoring (with the U.S. Forest Service) the Volunteer Wilderness Host Program in the Pecos Ranger District. VFO is seeking volunteers to spend four to six weeks backpacking in the Pecos Wilderness in order to educate hikers in the wise use of the forest. Hosts must be at least 18 years old. Work week is 5 days; \$10 per diem.

ALBUQUERQUE VISITING NURSING SERVICE, a United Way agency, is looking for hospice volunteers. Orientation and training in support, counseling, and care to hospice patients are provided.

CHRISTINA KENT DAY NURSERY provides an accredited preschool program to children of income-eligible (primarily single) parents. The nursery needs volunteers to build toys at home, to do a carpentry activity with the children, and to play a musical instrument and sing with the children.

ALBUQUERQUE SHELTER FOR VICTIMS OF DOMESTIC VIOLENCE is seeking a female residential advisor to work the 5 p.m. to midnight shift on Tuesdays, Thursdays, and Fridays. Two advisors are on duty at all times. Training will be provided for this position, which pays \$5/hour.

Welcome

Albuquerque

Walter Gutierrez (1634)

Dominic Montoya (2311)

Illinois

Dahmin Chu (2115)

Massachusetts

Andrew Bennett (2541)

Pennsylvania

Robert Richards (6310)

Q. Several Sandians are interested in serving as an advisor for one week for student companies during Business Awareness Week. However, there is no policy whereby Sandians could get some special leave to contribute this service to the community. Is there any way other than vacation to enable Sandians to contribute to this program?

A. Your desire to volunteer your services as an advisor to the Business Awareness Week program is understandable and appreciated. This is but one of many programs that Sandia as a company would like to support more fully. In this case, Sandia is supporting a high school student to attend the week-long program at NMSU in Las Cruces. The number and variety of worthwhile community activities is such that Sandia, like other companies, is forced to limit its direct participation. Sandia has chosen to support broad-based, multipurpose social agencies like the United Way plus a few others that can be justified on the basis of our primary mission as a research and development laboratory. In addition, we have initiated the Volunteers In Action (VIA) program to assist and encourage employees wishing to contribute in a more personal way to programs of their choice. Employees wishing to participate in the Business Awareness Week program may do so by using vacation or flextime. For more information on this program or other VIA programs, contact Organization 3163.

P.M. Stanford - 100

Q. Why does ARA Food Services require a \$5 "container deposit" when supplying a catered lunch for a Sandia organization? It creates a real hassle — not to mention a great waste of time and transportation money. The person putting up the deposit must be transported back to the cafeteria along with the trays, coffee urns, etc., after lunch to claim the deposit; then he/she must be transported back to the work place.

Events Calendar

June 8-29—"A Celebration of Watercolor," NM Watercolor Society spring/summer open show, reception June 8, 2-4 p.m., Albuquerque Public Library, Fifth & Cooper NW.

June 9—Movietime at the KiMo—Movies by Great Directors: "The Nutty Professor," Jerry Lewis (1963), 7 p.m.

June 12-12—Master Gardener Plant Clinic, 9:30 a.m. - 8 p.m., Room A, Albuquerque Garden Center.

June 14-16, 21-23, 28-29—"Gypsy," Albuquerque Civic Light Opera Assoc., 8:15 p.m., *2:15 p.m., Popejoy, 345-6577.

June 20-23—British American Theatre Institute presents "Sea Marks," 8 p.m., 2 p.m. on 23rd, Albuquerque Little Theatre.

June 21—NM Symphony Orchestra and the Dukes of Dixieland, last concert of "The NMSO Goes Pops—American Style," 8:15 p.m., Kiva Auditorium, 842-8565.

How about eliminating the deposit requirement? Obviously, the ARA people have the name, organization number, and phone number of the person responsible for the returnable equipment. So no employee in his/her right mind is going to skip out with ARA's coffee pots, etc., if he/she wants to remain employed at SNLA!

A. Before 1979, a deposit was not required for coffee containers. Because many employees were not returning the coffee containers within a reasonable period of time (even with follow-up calls from ARA), there were none available to other employees for scheduled lunches or meetings. During 1979, the Food Committee directed ARA to require a \$5 container deposit for coffee containers. It worked; since that time, employees have been returning the coffee containers and other items promptly so they are available for other employees' use the next day.

J.R. Garcia - 3500

Q. The question asked about high prices in the Sandia cafeteria should also be asked of the snack bar in Bldg. 800. For example, a 6 oz. can of V-8 juice costs 60¢ each, when they can be bought at a local grocery store for 21¢ each. Even Circle K doesn't charge 60¢ a can. A postage stamp costs 27¢ and can Cokes are 58¢. We understand that a profit has to be made, but this is beyond reason.

A. The Randolph-Shepherd Act states that all food service on a federal facility must be operated by the blind. The Snack Bar in Bldg. 800 is regulated by the State of New Mexico Division of Vocational Rehabilitation (DVR). The prices are set by the independent operator of the facility using the wholesaler's recommended margin of profit over the wholesale cost. DVR requires that the Snack Bar be competitive with the surrounding community's manned facilities (e.g. Circle K, etc.).

You mention a 6 oz. can of V-8 juice, a can of Coke, and a stamp. The Snack Bar's price for the first two items is \$.58, which includes tax. Circle K's price is \$.31 for V-8 and \$.55 for Coke but does not include tax. A stamp may be purchased out of a machine for \$.25. The Snack Bar's price is \$.27.

The wide difference in price for the V-8 juice was brought to the attention of the DVR. They contacted the Snack Bar. The result is that the price of V-8 juice will be lowered. In the future, all prices will be reviewed on a regular basis instead of relying solely on the wholesaler's recommendation.

J.R. Garcia - 3500

Q. I have a reserved parking place and occasionally need to use my car during the day. Invariably, upon my return, somebody else is in this "reserved" place. If the offender is a Sandia employee, the matter is easily taken care of. As often as not, however, the offender is not an employee (no Sandia decal) but a visitor. There is therefore no way to identify the owner of the

vehicle. Once I was able to track down a visitor in the 800 lobby because the car had a temporary license that gave the name of the business owning it. His excuse was that if the space was not occupied at 10 a.m., he assumed it was not needed all day.

Would it be possible to erect signs cautioning visitors (and others) not to park in reserved spaces?

A. The situation you describe is frustrating. To alleviate it, we have asked that a column for vehicle license numbers be listed in the Visitor Register in the lobby of Bldg. 800 and in the Badge Office for official visitors. We have also posted a sign in the Badge Office that clearly designates Visitor Parking. In addition to these changes, I would suggest you call Security and give them the license number, and they will track the offender for you.

C.L. Brumfield — 3400

Q. In the same mail delivery that brought me the new Code of Conduct booklet, I received a plea for money from a political party; the latter was addressed to me at my correct division number, though no mention of SNL appeared in the address — the only identifying info, other than my name and division number, was: P.O. Box 5800, Albuquerque 87185.

I have two questions:

- 1) How did the political party get my division number, if not from someone at Sandia (or some organization)?*
- 2) Can't the Mail Room automatically toss anything that is obviously political "junk mail"? We all get enough of that at home — and it's clearly in violation of the Code of Conduct.*

A. In answer to your first question, "We don't know."

The Sandia policy on release of mailing lists of employees is clear and unequivocal: such action is prohibited and always has been. We have heard that mailing lists of Sandia employees may be purchased from direct mail advertising firms in Albuquerque, but no information is available as to how those lists were compiled.

Sandia is keenly aware of its responsibility to protect the privacy of employee information and takes all reasonable steps to do so. Even outdated records and personnel tab runs are disposed of as sensitive information, to avoid inadvertent disclosure.

Employees known to be giving out information about the names and organization numbers of other employees, and employees encouraging the distribution of political material within the Labs are subject to discipline.

In answer to your second question, we cannot attempt to be the censor of mail by trying to select that which is useful and that which should be thrown away. We can only encourage an employee who is receiving unwanted mail to ask the sender to remove his or her name from the mailing list.

H.M. Willis - 3100

Tracking Mexican Hot Rods

It has been slightly over a year since a truck carrying reinforcing steel bars (rebars) triggered an unmanned radiation detector at the exit from the Los Alamos Meson Physics Facility. Thomas Buhl, a health physicist at LANL who headed the Radiation Protection Office of New Mexico's Environmental Improvement Division at the time, recently offered an update on how the emergency was handled and its current status.

A brief review of the incident: The truck, which had made a wrong turn into the Meson Physics Facility, was carrying rebars contaminated with cobalt-60. The source was traced to a junkyard in Ciudad Juarez, Mexico, which had bought an unused radiotherapy machine mistakenly taken from a hospital storage room by a scrap dealer. Some of the machine's parts, including the cylinder containing thousands of tiny pellets of the radioactive isotope cobalt-60, were sold to foundries in Juarez and the city of Chihuahua, 250 miles to the south. Here they were recycled into table legs and rebars. Up to 3000 people in both cities were exposed to radiation, and 150 required hospital treatment. A few, mostly the Juarez workers who handled the cylinder, received a dose of 300-450 rems, enough to cause radiation sickness. A joint U.S.-Mexican epidemiological group will monitor most of the affected people to record any unusually high rates of cancer and other ailments that may be related to the radiation exposure.

Buhl reviewed the efforts by both the U.S. government and the state of New Mexico to locate all the radioactive rebars, some of which had already been installed in the foundations of new houses in Farmington and Bloomfield. However, the search was not restricted to New Mexico; within weeks of the rebars' leaving the Mexican foundries, shipments had been delivered over most of the United States. ("I was very impressed by the speed and efficiency of our commercial system," says Buhl.) State and federal agencies mounted a nationwide search for the consumer materials, and all contaminated materials found in the United States were returned to Mexico for disposal. At the request of Mexican authorities, DOE conducted an aerial survey of Juarez, Chihuahua, and the highway between the two cities to locate radioactive pellets that had been scattered during transport. The heaviest concentration was in Juarez; most were located and disposed of (some of the pellets, which are smaller than sunflower seeds, had been embedded into the pavement).

Mexican federal authorities have chosen a site about 50 kilometers south of Juarez to dump several hundred tons of the contaminated steel. However, city officials in Juarez are objecting to the site because it is right in the path of the city's future expansion. And farmers in the area complain that the steel would poison their scarce underground water supplies (*New Scientist*,

The South 14 Bookstand - I approached *Memoirs of Marian Russell Along the Santa Fe Trail* (UNM Press) anticipating more of the gingham and the quaint. Quaint it's not and I must have missed the gingham between episodes of frontier brutality, killing, and just plain hard times. This Marian Russell came by covered wagon to New Mexico in the 1850s when she was five or so, grew up in Albuquerque, Santa Fe, and Fort Union, married and ultimately settled on a ranch in southern Colorado. She saw it all — the incessant Indian warfare, the transformation of New Mexico following its cession to the United States, the polyglot cast of colorful characters, the advent of the railroad, and the state's entry into the 20th century. Before she died in 1936 at age 92, she had the wit and energy to dictate these memoirs, and she has given us a gritty and compelling story, incidentally revealing the steel that lay beneath her surface. A remarkable woman. In paperback, the book runs \$7.95 and is available at the LAB NEWS office in Bldg. 814. • js

* * *

The NM Symphony Orchestra, Conductor Roger Melone, and the Watermelon Mountain Jug Band team up for an evening of song and refreshment in the Symphony's annual June Jamboree, "Music Under the Stars," an outdoor concert and buffet on the First Plaza, downtown Albuquerque, June 8. Food service starts at 6:30 p.m. and the concert begins at 8:15 p.m. To reserve tickets — from \$19 per person at stage-side tables; \$13 per person at the banquet tables; and \$5 and \$9 for general admission — with MasterCard or Visa, call the Symphony Box Office, 842-8565.

* * *

The LAB NEWS welcomes three summer staffers. Sharon Ball, chairman of the English department at Valley High School, is spending her second summer writing feature articles. Kristen Kanuika, who will begin her sophomore year at NM Tech next fall, is also working for a second summer. She divides her time between the LAB NEWS and 3161. Scott Sanders, assistant professor of English at UNM, is a newcomer to Sandia. He is director of the professional writing program in the university

13 Dec. 1984, p. 7). However, Buhl reports that some or all of the steel might be used in the containment structure for the Laguna Verde nuclear reactor under construction near Mexico City.

How to prevent such incidents in the future? "It's just something one has to be vigilant against," says Buhl. "This was at least the second time such an incident had occurred. Two years ago, cobalt-60 found its way into a foundry in Auburn, N.Y. Fortunately, that radioactive steel was detected before being shipped."

Buhl says the U.S. Customs Service has now equipped all 21 crosspoints to Mexico with radiation detectors with permanent monitors at the five major sites. A program has also begun to monitor highways in the U.S. No contamination has been detected since the Mexican rebar incident.

Take Note

English department and is writing technical articles.

* * *

Mark Hedemann (1232) recently won a contest conducted within the Pulsed Power Sciences Directorate 1200 to give PBFA I a new name. The experimental accelerator is currently a fusion research test-bed facility, used for proving hardware, components, and operations procedures to be used on PBFA II, the machine that Sandia expects will achieve laboratory fusion. In January 1986, work will begin to convert PBFA I into the world's largest laboratory X-ray source. Design work is well underway for this conversion, and herein lies the need for a new name.

The troops in 1200 involved in the project were calling the new X-ray accelerator PBFA X, which sounds pretty good but is not quite valid — PBFA stands for *Particle Beam Fusion Accelerator*. The role of the new machine will not be fusion research but radiation effects research and weapon component hardening testing. It will be a major tool in Sandia's Simulation Technology program that supports the weapons program and Strategic Defense Initiative work.

All of the 1200 people were asked to submit suggestions for a new name. The winner is "Saturn," which suggests the multiple concentric rings in the diode of the new machine — rings reminiscent of those of the planet Saturn. Saturn, when the conversion is complete in December of 1986, will provide 25 terawatts of power and deliver an X-ray dose rate of 5×10^{12} (five trillion) rads (Si) per second.

* * *

The American Society of Civil Engineers and the American Society of Mechanical Engineers are holding a joint mechanics conference June 24-26 at UNM. More than 400 papers will be presented at the conference on technical topics in applied mechanics, engineering mechanics, biomechanics, and fluids engineering.

Sandia, Los Alamos, and UNM are sponsoring the event. Fred Norwood (1533) is co-chairman. For registration information, call 844-6308.

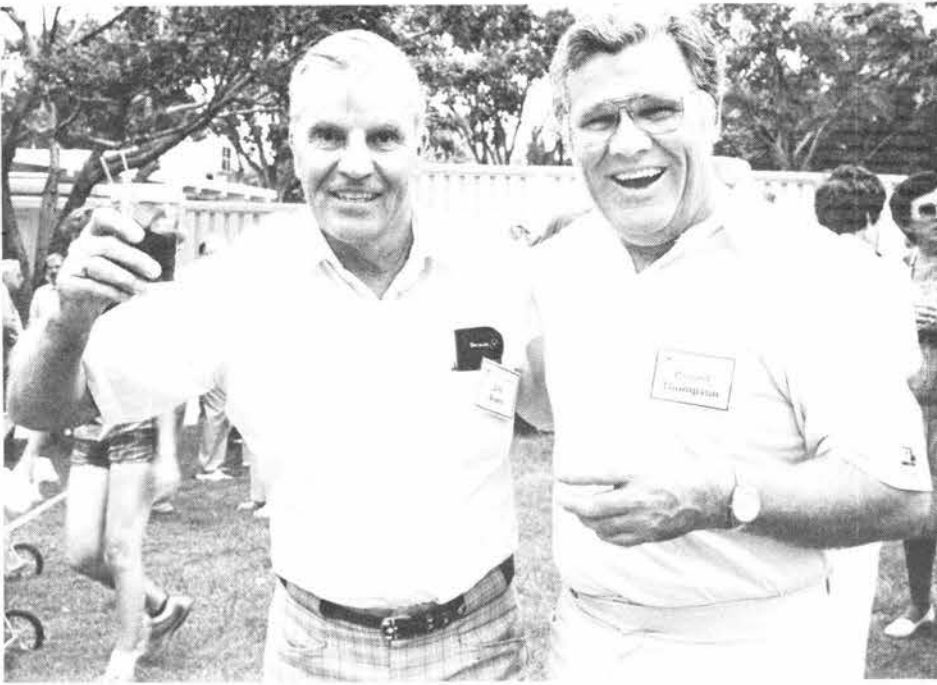
* * *

You don't see many "Danger" signs on ponderosa pines (the ones with the long needles), but they are not without hazard. Retiree John Shunny was walking through the ponderosas next to his driveway when he felt a stinging sensation in his right eye — a pine needle had penetrated the lens. After three visits to the ophthalmologist, an eye patch, and some antibiotics, the eye has recovered. According to the doctor, the principal danger from encounters with plant growth is fungal infection, which can lead to loss of the eye. John reports that the episode provided less than maximum enjoyment, suggests a careful approach to ponderosas.

Sympathy

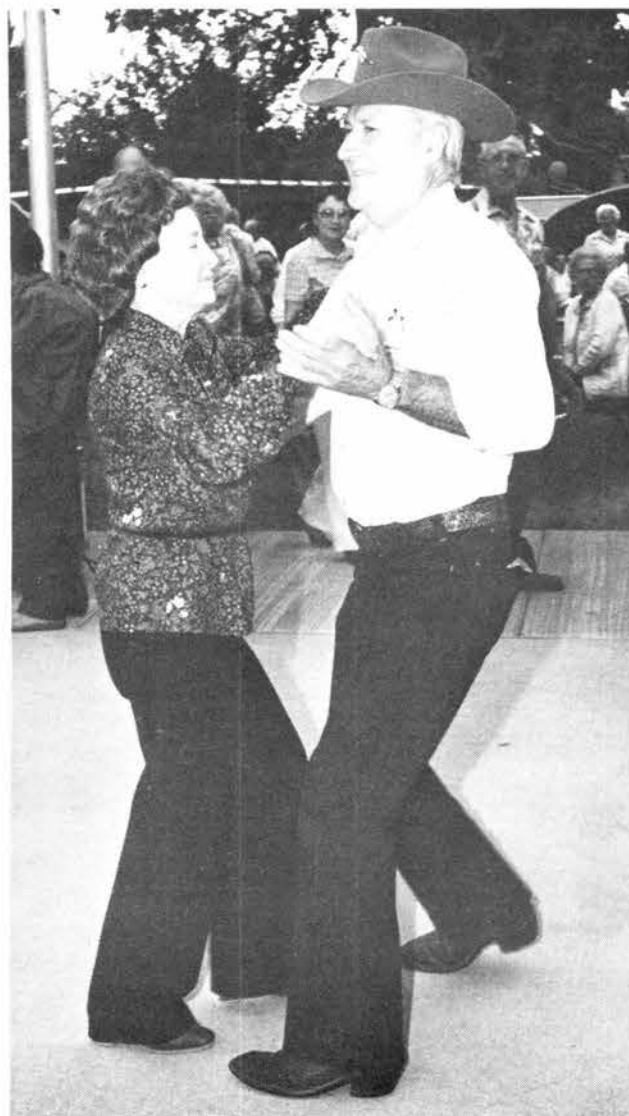
To Peggy Montoya (7240) on the recent death of her father-in-law.

Retiree Picnic 1985



The rain didn't arrive until the picnic was officially over. Some 1500 Sandia retirees attended. And a great time was had by all.

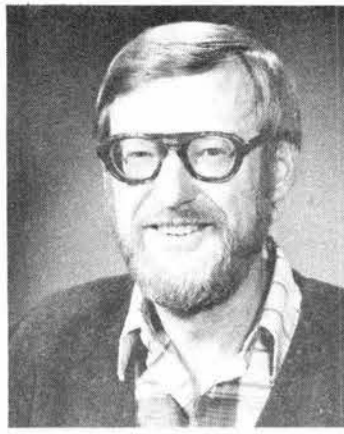
Sponsored by the Benefits Department, hosted by Small Staff, and catered by the Coronado Club, the occasion gave the retirees a chance to talk over old times and plan some new ones. Entertainment featured the Bob Banks (3531) Trio and strolling troubadour Mike Michnovicz (2833).



MILEPOSTS

LAB NEWS

JUNE 1985



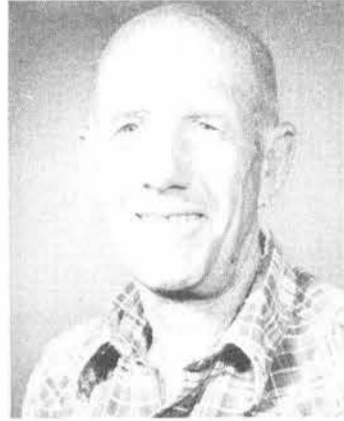
Bill Riggan (2565) 30



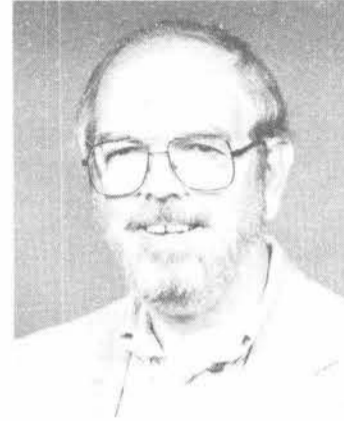
Rollie Baack (7265) 25



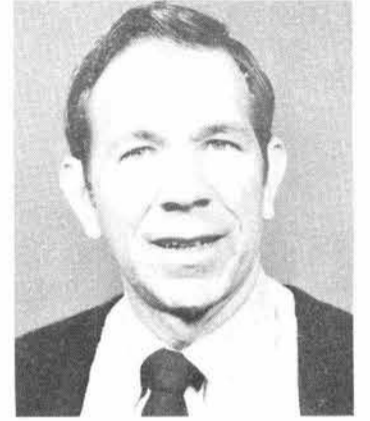
Ward Hunnicutt (7800) 35



Delmar Gronseth (7811) 25



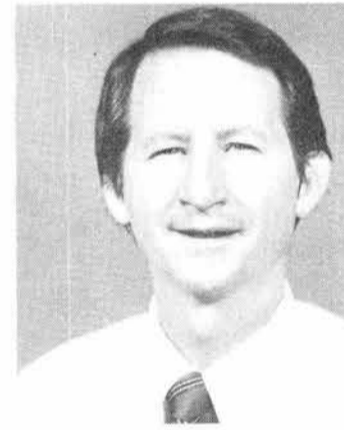
Joe Danclovic (3523) 30



David Caskey (5264) 20



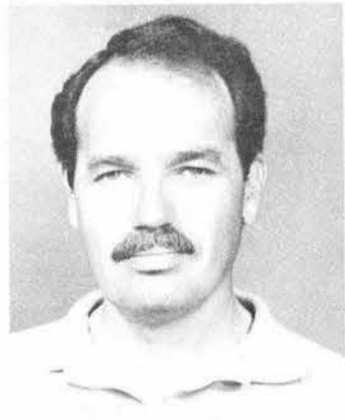
Ruth Jones (7250) 20



Herb Sutherland (6256) 15



Jan Vandermolen (132) 15



Don Lobitz (1524) 15



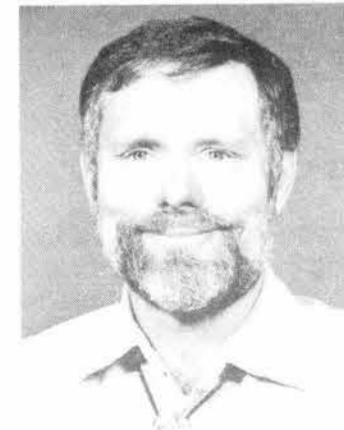
Jaye Bullington (310) 10



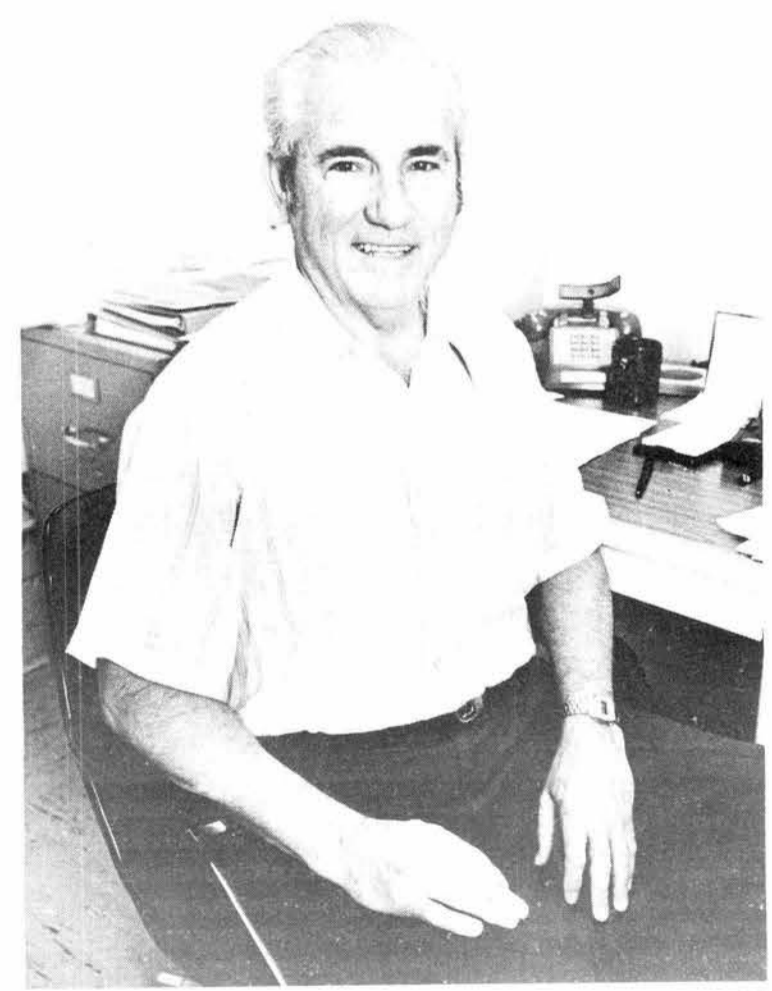
Duwayne Branscombe (2116) 25



Jack Lafleur (2124) 30



Bill Shurtleff (7552) 20



Don Knott (7862) 35



Favorite Old Photo

This photo from the family album was made in 1898 in front of my grandfather's house in Pauls Valley, Oklahoma, only it was called Indian Territory, Chickasaw Nation, in those days. My grandfather owned the C.O.D. Steam Laundry (you had to pay before you could get it) and that's his driver John Cathey in the delivery rig. The horse's name is Sam. Grandfather operated the laundry in Pauls Valley until 1920. My father operated a laundry in Salina, Kans., until 1970 when he retired. — Ken Morgan (2361)

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to: Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8 1/2 by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per issue per category.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignments.
10. No commercial ads.
11. For active and retired Sandians and DOE employees only.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

- FREE dog house for large dog. You haul it away. Finger, 345-6865.
- LAWN mower, Craftsman, self-propelled gear drive, rear bag, 22" cut, \$95; Scott drop spreader, \$15. Bundy, 821-1846.
- PLAYPEN, bassinette, \$30 each; two cemetery lots, Sandia Memory Gardens, price negotiable. Vand, 255-0685.
- WASHER, avocado, \$60; dryer, white, \$90; towbar, \$75. Edwards, 822-1772.
- COMPUTER, S100 bus, Z-80, 64K memory, CP/M, two 8" disk drives, one 5 1/4" drive, Zenith Z-29 terminal; software. Dawson, 298-9508.
- DISHWASHER, Sears portable, butcher block top, 1 1/2 year maint. agreement w/Sears, \$120. Barton, 268-7349.
- SWIMMING pool filter, high rate sand type, 1700 gal/hr, max. 20,000 gal pool. Navratil, 293-5527.
- SAFETY ramps, portable, used twice, new \$22, sell \$15. Schkade, 292-5126.
- SOFA, brown, cream, peach print; 8 large ruffled pillows, floral print; ruffled valance on bottom, \$275. Stewart, 298-4955.
- SMALL Terrier, cairn/silky, free to good home, house broken, watch dog. Littlejohn, 823-2456.
- SOFA, \$100; chairs, \$35 each. McIlroy, 299-4977.
- GUN, .22 Marlin model 39m, lever action, straight stock, \$165. Payne, 292-7037.
- RUBBER rafts, oars and life vests; partially stripped dressers; Curtis Mathes color TV. Morrison, 298-0347.
- CAMERA, Kodak 920, instant photos, new \$20, sell \$12. Shunny, 265-1620.

- CANOE, 15' fiberglass w/2 oars, life jacket, \$225. Chirigos, 884-5686.
- CANVAS trailer awning, \$60; 6' trailer axle, \$90. Ross, 296-9794.
- 100 children's books (grade school age), .25 to \$1.25; climbing dome, \$15; picnic table and benches, \$20. Scrivner, 299-0356.
- NIKKOR 24mm/2.8 AI, \$190; Sigma 300mm/4.5 APO, \$225. Passman, 821-4999.
- SEARS, refrigerated air conditioner, 8500 BTU, \$150. DePew, 255-3231.
- 12X14 shag carpeting, rust color, \$20. Resnick, 292-3825.
- STEREO AM/FM radio, cassette recorder/player, turntable, speakers, Soundesign brand, 3 yrs. old. \$90. Holmes, 292-0898.
- TV HEATHKIT 23", G R-295 dual speakers, Mediterranean cabinet, needs adjustments, \$75. Hopkins, 255-8902.
- FREEZER, 22 cu. ft., upright, \$125. Davidson, 294-6128.
- CABOVER camper, sleeps 4, stove, oven, refrig., toilet, jacks, \$1200 OBO. Shea, 897-1683.
- SOFA, 6 1/2 ft., oak frame, new upholstery, \$225 or make offer. Freyermuth, 299-2053.
- WEDDING ring, cubic zirconia, gold setting, \$250 new, asking \$135. Sanchez, 821-6391.
- PORT-A-CRIB, \$70. Osborne, after 5, 296-0433.
- DRAFTING table, solid wood construction, 31"x42" adjustable angle top, 41" high, \$70 OBO. Russick, 884-7938.
- RADIO Shack tube tester, doesn't work, \$5; 10-pane exterior door, 36"x79", \$25. Barnette, after 6, 292-5186.
- GARAGE sale: Dungeon Dragon games; baby furniture; clothes; swing frame; child's lamp; jeans; Texas Instrument calculator. Self, 296-4137.

- KITTENS, free to good home. Weber, 821-2297.
- CAMERA outfit: Miranda 35mm single lens reflex w/6 lenses, \$100. Miller, 255-7716.
- NIKONOS IVA 35mm underwater camera w/SB101 auto. flash unit, \$495. Shamblyn, 293-2568.
- STORM DOORS, for dbl. door entry-way, Sears, white, new \$400, sell \$150. Greenwood, 298-5268.
- WESTERN or colonial style overhead fixture, 3 chimney lights, wood & brass, \$20. Burstein, 821-6688.
- LAWN MOWER, Sears Craftsman 20", rotary, \$75; roof bicycle rack for 2 bicycles, \$25. Owyong, 294-1884.
- CAMPER, 8' cabover, stove, ice box, heater, new curtains, water tanks, LP tank, \$795. Tapp, 821-3843, 892-8971.
- NIKON motor MD-11, fits FM, FM2, FE, FE2, FA, \$65. Trucano, 298-2623.
- TV Heathkit, GR-269, 18" color, solid state, 9 plug-in boards, complete set of manuals, \$50 OBO. Pierce, 299-2801.
- SOFA bed, \$150; boy's & girl's 20" bikes, \$25 each; charcoal grill &

- cart, \$20. Eckelmeyer, 296-2148.
- ELECTRONIC parts: boxes of resistors, pots, capacitors, transformers, deflection meters, terminal boards, etc., best offer. Jenkins, 822-8885 after 5.
- BAR-B-Q grill, covered, \$15. Nichols, 296-8259.
- LAWN MOWERS, push type, Sears, w/catchers, \$40 & \$80. Scheiber, 298-0904.
- WATCH BAND, man's silver & turquoise, never used, \$75 OMO. Hughes, 299-6674.
- NECKLACE, squash blossom, \$300; grandfather clock, walnut, triple chime selection, 78" high, \$500. Baczek, 255-3429.
- CLOTHES dryer, lg. capacity, end-of-cycle signal, uses propane or natural gas, \$65. Roehrig, 281-2695.
- TEAC reel-to-reel tape decks, auto-reverse, A1500W, \$90; A4010-S, \$120; Harman-Kardon AM-FM receiver, model 330A, \$35. Guilford, 255-6294.
- GOLD shag carpeting, two lg. pieces for total of 50 yds., \$25. Filusch, 299-5932.
- SOFA, earth tones, \$195; lg. macrame dbl. hanger (plant and table), \$35; assorted picture frames. Arnold, 822-1307, 296-1669.
- EVINRUDE outboard motor, 5 hp angler, gas line & 6-gal. tank included, \$225. Oberkamp, 292-4366.
- 5-YR-OLD black gelding quarter/apaloosa, trained, some dressage, \$1K; youth English saddle, \$90. Gruer, 296-8163.
- TENT-TRAILER, '85 Palomino P3, used once, sleeps 6, ice box, stove, awning, \$2900 OBO. Moore, 266-8135 after 4.
- SEARS car top carrier, \$40; Rolleiflex "T" camera, \$100; Winco 3000-watt generator, \$400. Graving, 865-5581.

TRANSPORTATION

- '68 BAJA bug, blue, roll cage, star rims, roll bumpers, new clutch, rebuilt carb, \$2500 firm. Powell, after 5, 877-4939.
- '75 CHEVY 4wd pickup, AM/FM cassette, AT, locking hubs, big tires, custom rims, roll bar, list kit, 50 gal. gas tank. Garcia, 299-7283.
- RALEIGH grand prix 25", new tires, tubes, alloy rims, spokes, hubs, free wheel & saddle, \$150 OBO. Geist, 298-3558.
- '79 FORD Fairmont, 4 doors, auto, air, 6-cyl., less than 27K miles. Dawson, 298-9508.
- '76 HONDA CB200T, electric start, new battery, new rear tire, luggage rack, 9500 miles, \$270. Heffelfinger, 268-2261.
- '78 FORD F-150, camper shell, dual tanks, AM/FM cassette, new tires, low mileage, 3 speed, 6-cyl., \$3000. Chirigos, 884-5686.
- '80 HONDA station wagon, 5 speed, AC, AM/FM, 52K miles, \$2900. Ross, 296-9794.
- '83 KOMFORT 40' travel trailer, tip-out, dual AC, WD hook-up, storm windows, Levelor blinds, rollout awning. Daut, 255-2529.
- '64 MUSTANG, AT, PB, PS, AC. MacInnis, 898-1628.
- '75 OLDS Starfire, V6 engine, 60K miles, AT, AM/FM, AC hatchback, \$1200. Molecke, 296-5850.
- '76 FORD Pinto, R&H, PS, PB, hatch, \$900 OBO. Cooper, 298-3898.
- '81 YAMAHA XS400, 2750 miles, \$850. Braithwaite, 822-1998.
- '77 VW Rabbit, 4-door, AT, \$1600. Marder, 883-3863.
- '85 ISUZU pickup, side view mirrors, under warranty, 2500 miles, \$5600. Raisen, 298-9344.
- '73 PINTO wagon, needs work, \$100 OBO. Foty, 268-0412.
- '79 YAMAHA XS1100 shaft, fairing, new tires, 25K miles, one owner, \$1595. Kimberling, 281-1932.
- '74 ELDORADO mini motorhome, 20 ft., sleeps 6, roof cooler, dash air, stereo, Dodge chassis, 360 V8, 44K miles, \$8900. Walter, 298-0471.
- '84 HARLEY Davidson XLH 1000, low miles, \$4200. Vargas, after 6, 242-7097.
- GUERCIOTTI frameset, 61cm., including Campy headset, Dura-Ace shifters & bottom bracket, Cyclone front derailleur, SR seatpost, silica pump. Loucks, 281-9608.
- SAILBOAT, Sunfish 14' w/trailer, fiberglass hull, aluminum mast, \$950. Shea, 897-1683.
- '79 FORD Mustang Ghia, 34K miles, one owner, loaded, \$4100 firm. Pabst, 884-5418.
- '73 PONTIAC Catalina, one owner, new interior, hood, tires, & battery; 4-dr., PS, PB, AC, \$850. Tapp, 821-3843, 892-8971.
- '75 DODGE Dart, AT, PS, AC, 2-dr., 80K miles, one owner, \$1200 OBO. Shirley, 821-0480.
- '76 VW Rabbit deluxe, 2-dr., 4-cyl., orig. owner, \$1600. Barker, 294-0254.
- '71 VW Beetle, rebuilt engine, stereo, \$1800 OBO. Mora, 821-6759.
- '57 CHEVY 4-dr. wgn. Model 210, 6-cyl. Pierce, 299-2801.
- '79 CHEVROLET Impala, AT, PS, PB, AC, 2 new radials, \$2800. Oleckiewicz, 345-5012.
- '83 YAMAHA IT 175 dirt bike, \$975. Weber, 293-7522.
- '81 RELIANT stn. wgn., 4-spd., one owner, \$3150 or offer. Moore, 296-6586.
- '69 TOYOTA coupe, new front tires, \$100 OBO. Schneider, 299-6243.
- '83 SUZUKI RM-250-MX, water cooled, low miles, w/Bell Moto 3 helmet, Esprit boots, size 8, kidney belt, gloves, goggles, \$1900. Coalson, 298-0061.
- '76 JEEP Cherokee 4-wd, green/black, V8, 77,600 miles, \$3300. Carlyon, 268-4437.
- '81 SUZUKI 650GL, 10K miles, windshield, luggage rack w/adj. backrest, case guards, \$1600. Shields, 281-2858.
- '77 JIMMY (Blazer) 4x4 auto., lockouts, air, stereo, cruise, new tires & chrome spokes, \$4100. Aragon, 881-4795.
- '67 FORD Galaxy 500 2-dr., HTP, AT, PS, yellow, one owner, 86K miles,

best offer. Auerbach, 296-1489.

REAL ESTATE

- CABIN, 3 1/4 acres, El Vado overlooking the lake, 2 bdrm., full bath, fp in den, 14'x30' garage, generator, water-pump, butane tank, \$35,500. Rael, 884-4778.
- FIVE acres, 12 miles south of I-40 on NM 14, wooded, proven water, adjacent power, \$25,500. Meikle, 299-4640.
- MOUNTAIN land, 10 acres, Cedar Crest area, adjacent to Sky Top subdivision & city park, \$58,000, terms. Kinney, 298-5281.
- CUSTOM home, extreme foothills area, one year old, reduced for quick sale, energy saving upgrade. Gallegos, 293-2408.
- SANTA FE condo, north hill, 2 bdrm, 2 bath, sunset views, private courtyard, inner atrium, end unit, fully furnished, \$175K. Barr, 821-5870.
- CUSTOM, corner, N.E. great room, 4 bdrm, hobby room. Mansure, 821-4898.
- 10.5 ACRES, wooded, 3 mi. east of 217 on Juan Tomas, \$24K total, \$1K down, assume \$14K @8.5%. Kimberling, 281-1932.
- '72 MH, GREENWOOD 14'x64' w/added room 8'x20' 2-bdrm, North Hills MHP. Kaspar, 821-5521.
- TWO Sandia Plaza condos, 1-bdr., \$42K; 2-bdr., \$49,500; both assumable 8% NMFA + 2nd, all appliances, pool, landscaping. Garcia, 294-7354, 296-1038.
- TOWNHOUSE/Denver, 3-bdr., 2 1/2 bath, 1344 sq. ft., fp, gar., FHA assumable loan, sell or trade for local property. Sherlin, 299-1005.
- LOS LUNAS, 1/2 acre, custom house area, view, solar site. Cook, 869-6921.
- JEMEZ Mtn. land, 5 1/2 acres, electricity, natural gas, spring water; ponderosa pine & meadow, Nat'l. Forest surrounding, subdividable, \$48,500. Hughes, 299-6674.
- CONDO, SE, 1-bdr., \$28K, pool, hot tub, security, laundry, pest control, parking, assumable 11.8% fixed w/\$2K down/REC. Mattson, 842-1453.

WANTED

- FOOD dehydrator in working order. Kelly, 293-2475.
- LICENSED mason or contractor to build retaining wall in Cedar Crest area. Miller, 281-3655.
- HOUSING, faculty sabbatical needs furnished 2-bdrm or larger apartment, house, or condominium, Aug. 15, 1985 to Aug. 15, 1986, non-smokers. Blackwell, 292-5362.
- 5-GALLON aquarium with air pump. Locke, 299-1873.

WORK WANTED

- LAWN mowing, trimming, pruning, hauling, some landscaping — railroad ties, gravel, sod, etc. Paul Holt, 294-6928.

LOST & FOUND

- FOUND: SILVER bracelet on ground just outside Eubank Gate. Moore, 4-2464.
- LOST: LADIES Seiko quartz watch, by C. Club on 5/29. Reward, Radtke, 883-1657, 4-7875.

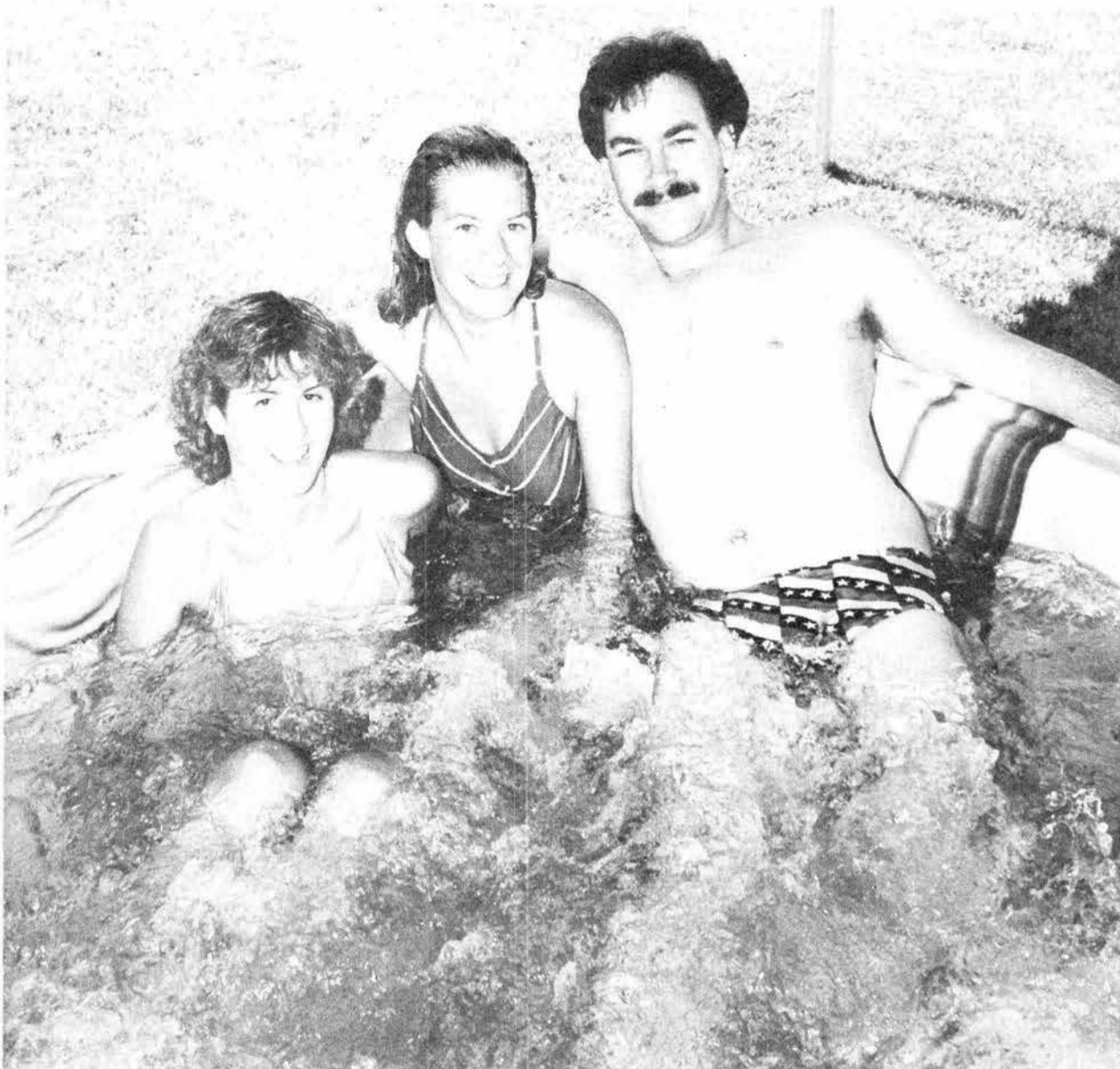
Isleta Poor Boys Play Tonight

TONIGHT, the Isleta Poor Boys return to the Coronado Club ballroom to make country western music for dancing from 8:30 until midnight. The dining room offers two-for-one prime rib or fried shrimp for \$12.95.

THE THUNDERBIRDS retiree group has scheduled a meeting of the general membership on Monday, June 10, at 2 p.m. in the ballroom. The card-playing Thunderbirds are taking the summer off, will meet again on Sept. 16. All Thunderbirds are invited to a camp-out at Bluewater Lake on June 18-19. Enter at Thoreau turnoff, and bring a potluck dish.

ON FRIDAY, June 14, Enchantment is on the bandstand; two-for-one filet mignon or fried shrimp is the dining room special at \$12.95

FATHER'S DAY, June 16, will be celebrated at the Club with an old-fashioned barbecue cookout on the patio starting at noon. There'll be a big spread of barbecued beef and chicken, an assortment of salads and fruit, baked beans, vegetables, and other goodies for \$5.50 adults, \$3 for kids. A grilled-to-order New York steak will be available for \$6.95. A western band will play for dancing from 2 to 6. Or bring the suit and swim in the twin pools. Draft beer for 50 cents will also be available. All this ought to



INTRODUCING THE PORTABLE SPA are lifeguard Tanya Payne, head lifeguard Carol Plugge, and Coronado Club recreation director Stan Ford. The spa has both jet and bubble action and a maximum water temperature of 104°. It is located in a shady spot in the patio, seats seven people comfortably, and is open to all adults with a pool-patio ticket.

take care of the old man on his day. Reservations are not required, but would help in the planning for the event. Call 265-6791.

TEENAGERS, sons and daughters of members, have a special night at the Club on Wednesday, June 19, outside in the pool and patio area starting at 7:30 p.m. The snack bar will be open. Dunn's Dancing Machine will play recorded music.

SINGLES gather on Thursday, June 20, for another single mingling evening starting right after work. Fifty-cent beer and margaritas will be available along with a free spread of munchies and goodies. Dunn's Dancing Machine provides the music. You provide the crowd — bring friends.

A TRAVEL PROGRAM on colorful New England is scheduled Monday, June 24, in the ballroom at 7:30 p.m. Charlie Clendenin (ret.) will host the meeting for Zia Travel.

The Club office has information on upcoming Club sponsored trips: Disneyland, June 23-24, \$202; Colorado, June 29, -July 6, \$299; Gallup Ceremonial, Aug. 10, \$35; Hawaii, Sept. 14-20, \$510; and Canyon De Chelly, Oct. 20-21, \$90.

SAND SCULPTURE winners at the big Memorial Weekend Pool Opening party last month were: "Sphinx" by Alex Saavedra, Marge Williams, Melissa Thompson, Holly Bleiver, Kathy Post, and Michelle Bernard — fourth place; "Big Foot" by Kelly Kristl — third place; "Alligator" by Bruce Stark, Jeff Benoist, and Brian Cone — second

place; and (trumpet fanfare) "The Maze" by Sara and Robert Setchell — first place. "These and the other seven entries represent, without a doubt, the finest sand art ever at the Coronado Club," said Charlie Clendenin, who helped honcho the affair.

THE JULY CALENDAR has a couple of events that need to be noticed right away so you can nail down your plans and be there. The annual Fourth of July Independence Day celebration is set for (oddly enough) July 4. This will be the standard Coronado Club pool and patio extravaganza with fun and games, a spread of luncheon goodies, a band concert, and a country western band for dancing — it adds up to a fine day for members, kids, and guests. The annual Luau is set for Saturday, July 6, repeating the successful formula of years past — great food and drink, Polynesian entertainment, and dancing with your shoes off. Mark your own calendar, call for reservations, and be there.

To Be Happy, Act Happy

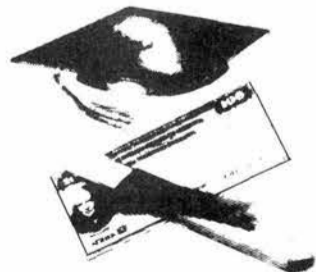


Just the act of flexing facial muscles into the characteristic expressions of joy or other emotions [a study found] can produce effects on the nervous system that normally go with those emotions. The findings may have implications for the art of acting, the effectiveness of advertising, the treatment of mental illness and understanding of brain functioning, according to Paul Ekman, a psychologist at U. California at San Francisco. Ekman, the principal researcher, believes the study does offer insight into brain function. He thinks it shows that the mechanics of facial muscle movement are closely tied to the autonomic nervous system, which controls heart rate, breathing and other vital involuntary functions. 'It is going to be quite surprising both to the public and the scientific community,' he said of the findings."

Harold M. Schmeck Jr. in *New York Times*

Give Your Graduate Credit . . .

with new competitive-rate U.S. Savings Bonds.



U.S. Savings Bonds ★
America's favorite way to save!